

Real World, Most Demanding
Biometric System Usage

or

“If you can get your system
to work here,
it will work anywhere!”

The
Biometric Consortium
2001 Conference

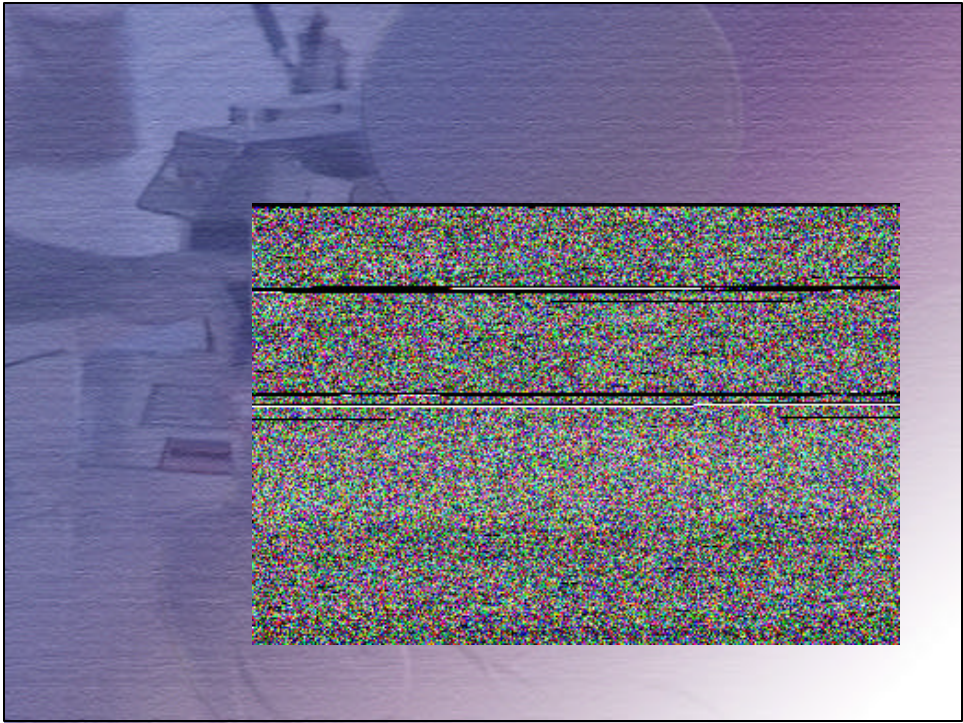
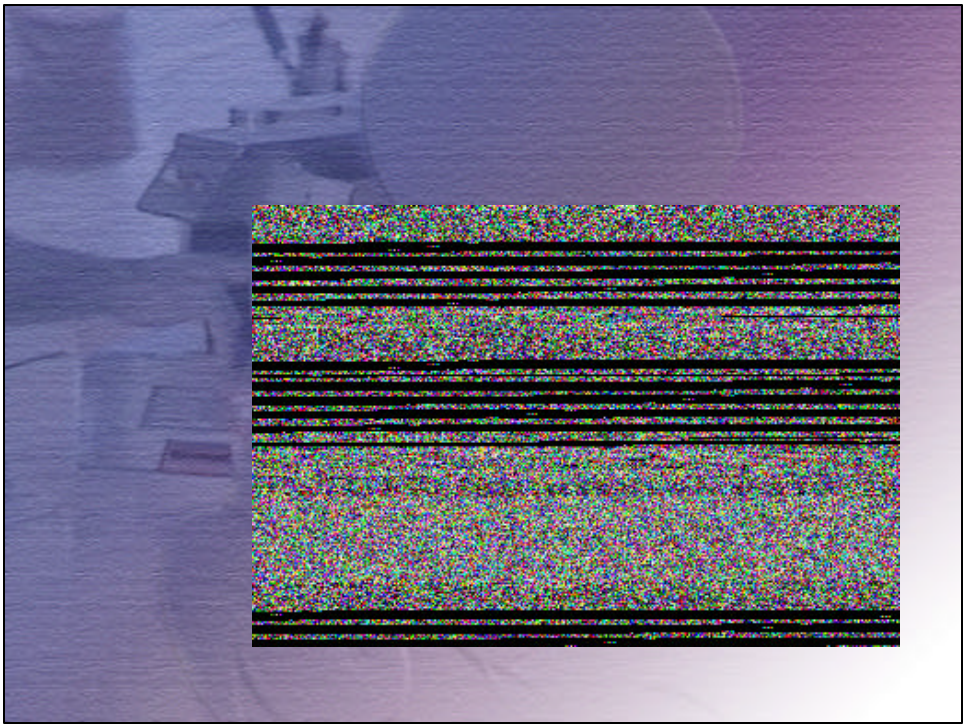
BIOMETRICS

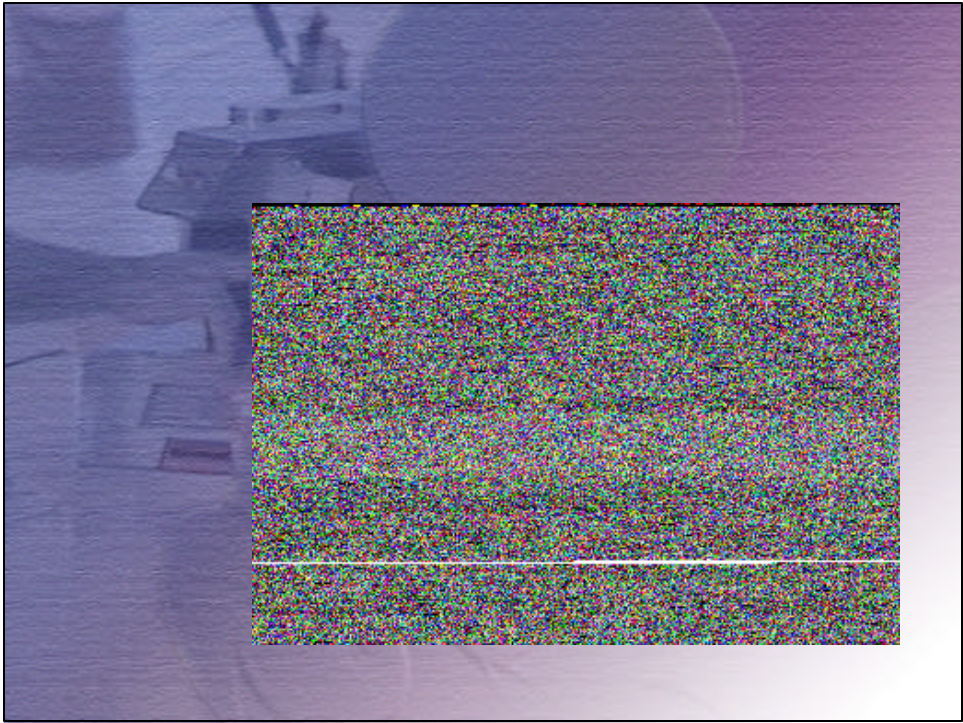
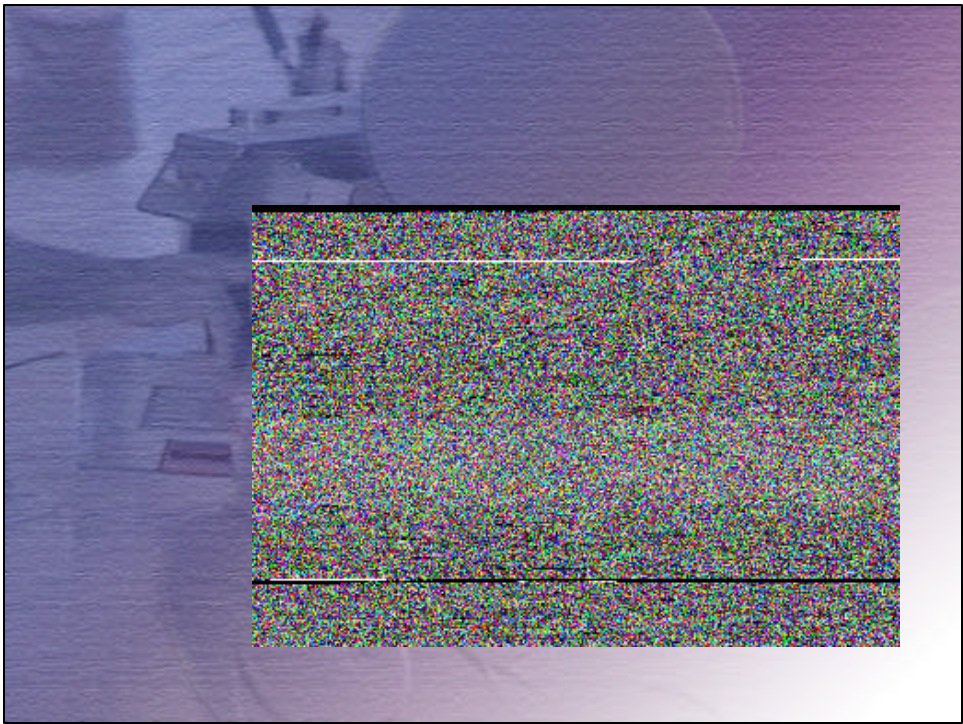


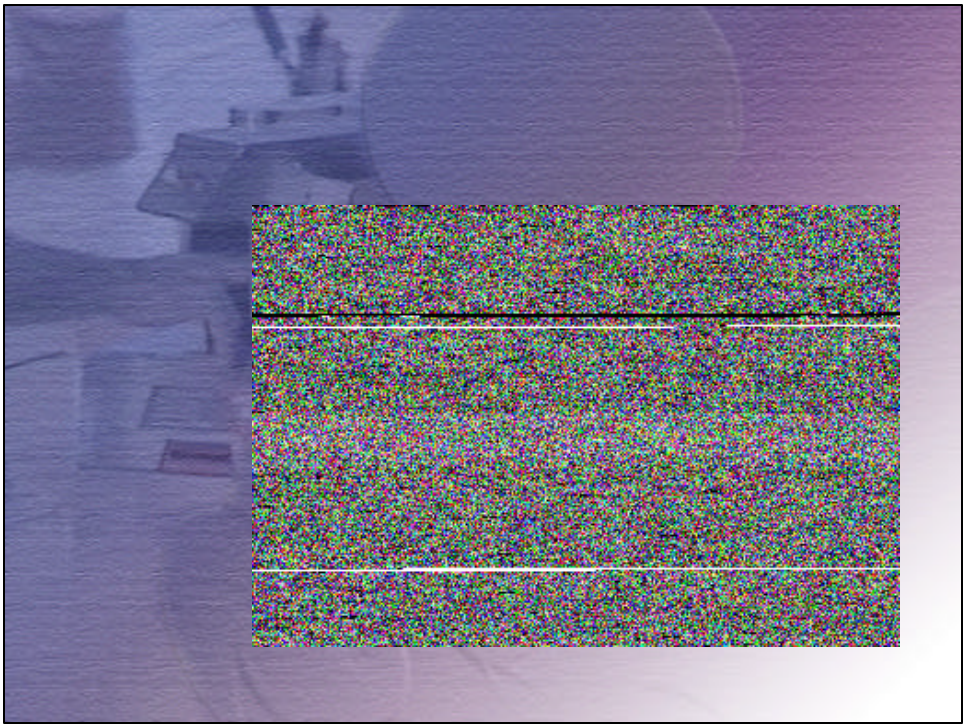
What is our major application?

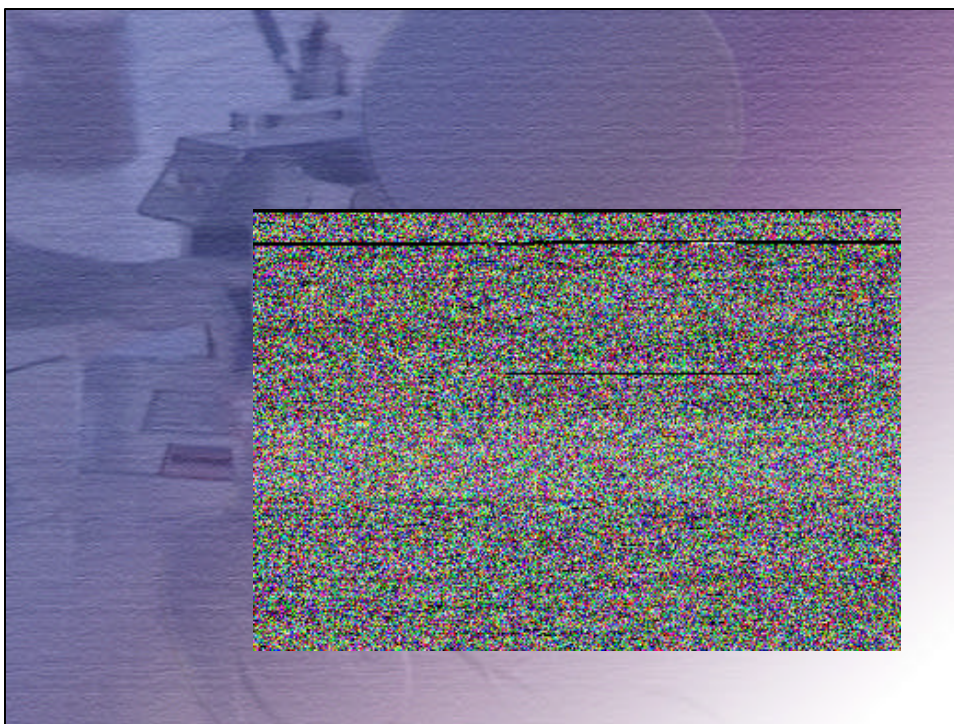
Entry ticket turnstiles -
102 biometric units in operation in eight
Walt Disney World theme parks in Orlando:











What is our biometric technology and processes?

We presently use two-finger geometry readers

Our comparison process is one-to-one verification

Our verification is anonymous; we do not know the identity of the passholder

Our enrollment is transparent - single feature presentation without operator intervention

Our reference templates are weighted by comparisons

We have processed over 12 million transactions since implementation

Who is our user population?

Everyone!

All annual, seasonal, or other non-transferrable passholders age 10 or older

Our population includes elderly, Foreigners, adolescents, disabled, and "opt-outs".

Our users present their biometric feature while wearing sunglasses, hats, suntan lotion, and jewelry. In addition, they are carrying children, tote bags, food, strollers, etc.

Our users are often sweating, tired, anxious, and confused.

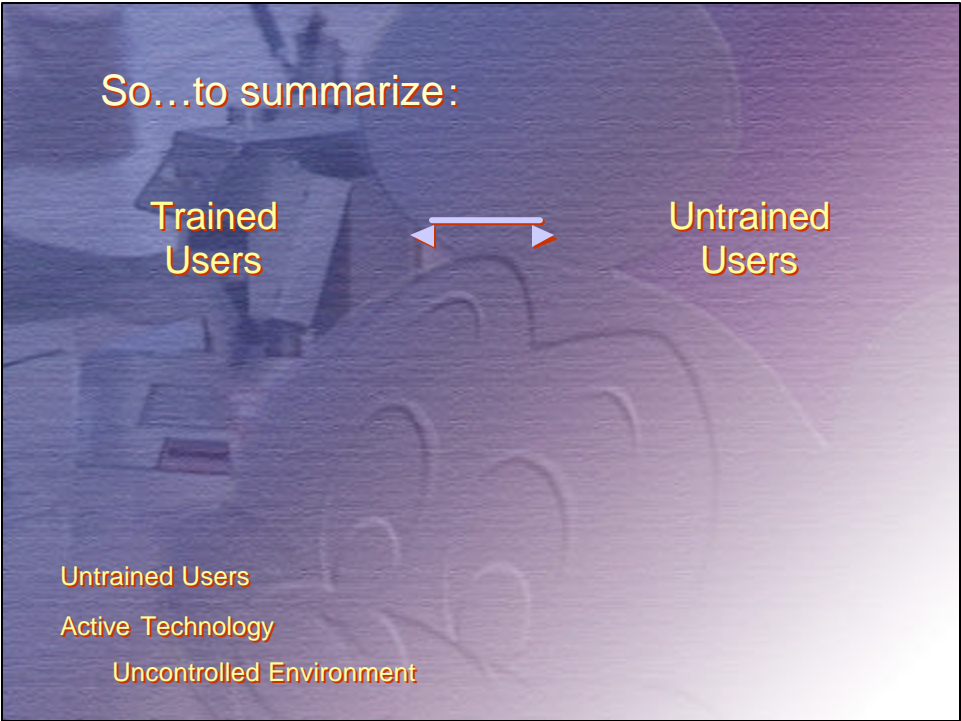
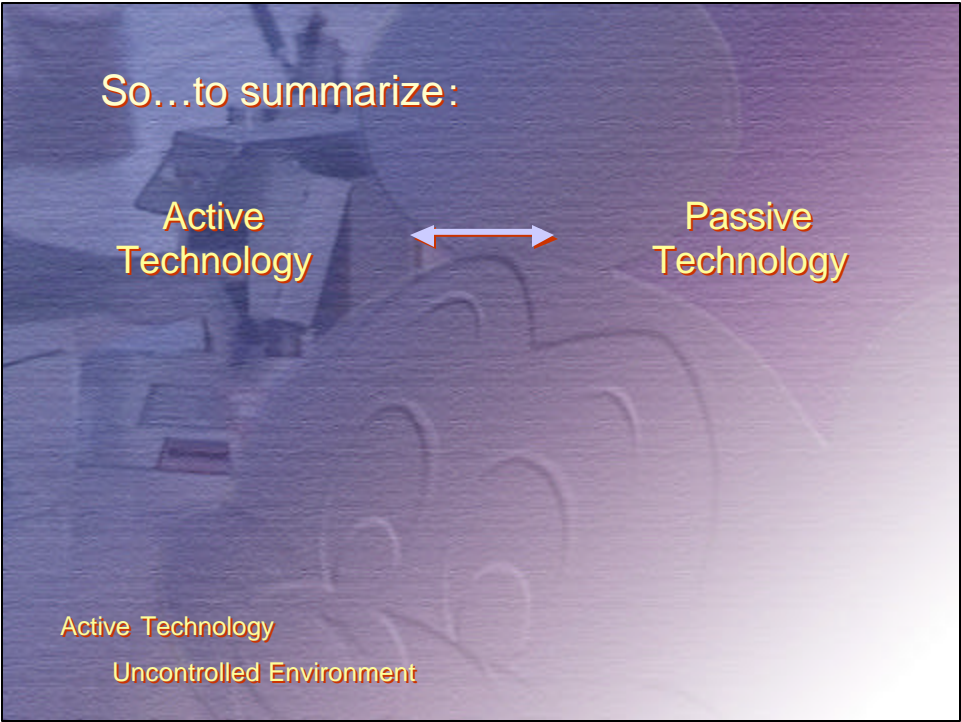
So...to summarize:

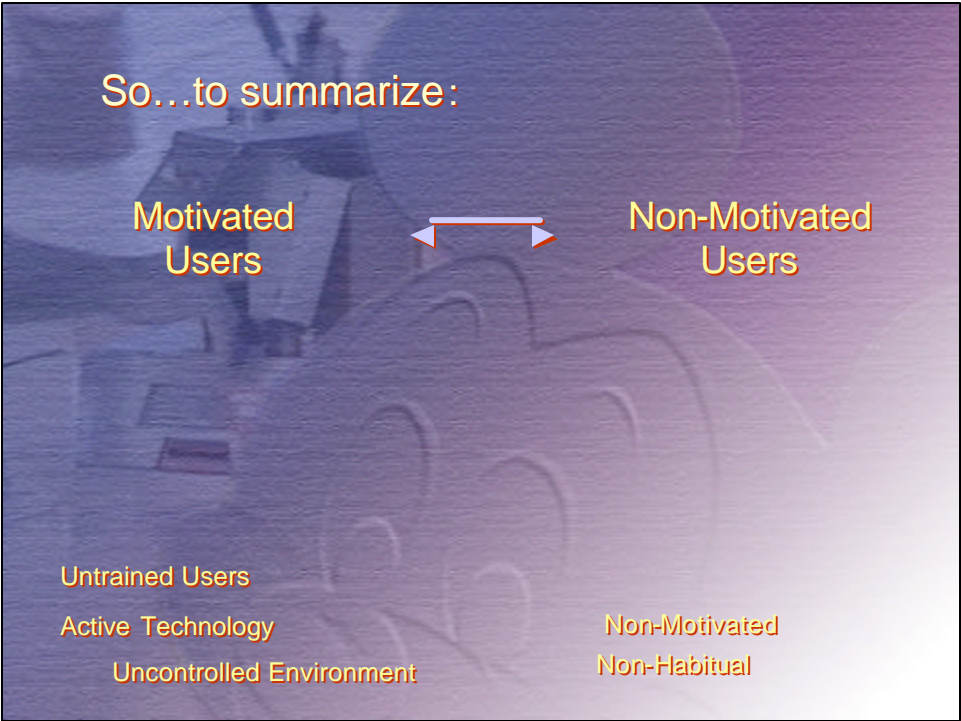
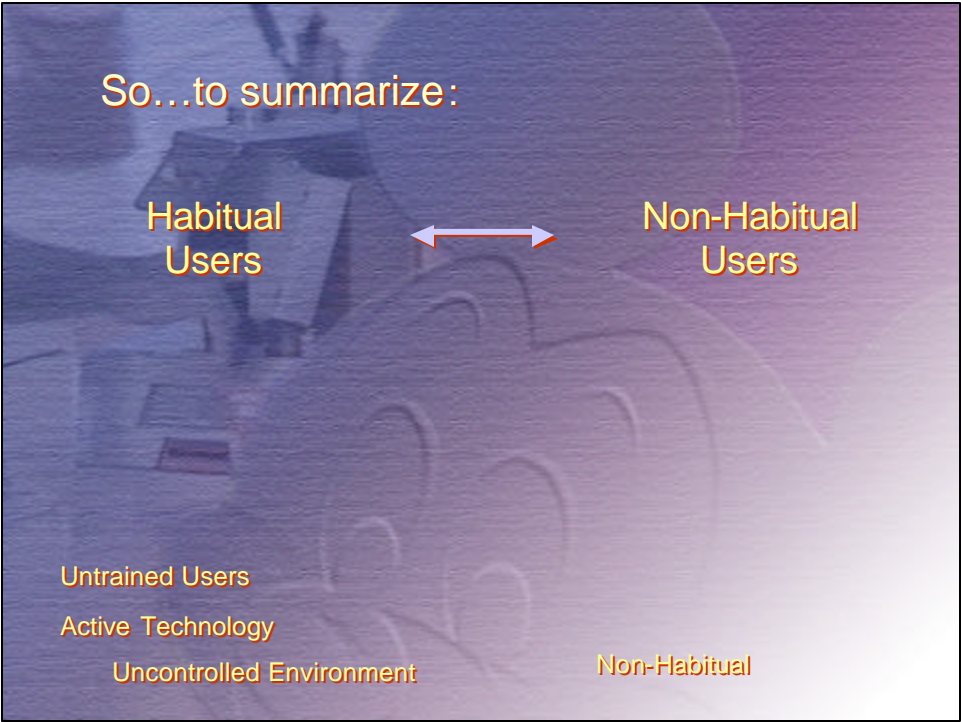
Controlled
Environment



Uncontrolled
Environment

Uncontrolled Environment







Why our biometric application is “inverted” from most?

Our liability from a false accept is limited to \$50 per occurrence

Our liability from a false reject exceeds that of a false accept

Our templates do not presently age more than one year

Until recently we have been concerned about template size due to system integration issues - that has been overcome

What does this mean?

Due to the limited risk and our user population, our primary parameter of concern is “throughput”... not “accuracy”, although we still care about accuracy.

We define throughput as the average transaction time for all transactions from insertion of ticket to time of accept or reject, including failures to acquire, repeat attempts, etc.

What are our key operational issues?

“Auto-enrollment” - enrollment must act like verification; no time for multiple presentations

Maximum device intuitiveness; no opportunity for training or instruction (potential language barriers)

Device technology must be acceptable to the user population

We feel we have “the bar” for ourselves internally...

What have we done since implementation?

Customizations:

Enclosure ruggedization for FL environment

Platten material improvements

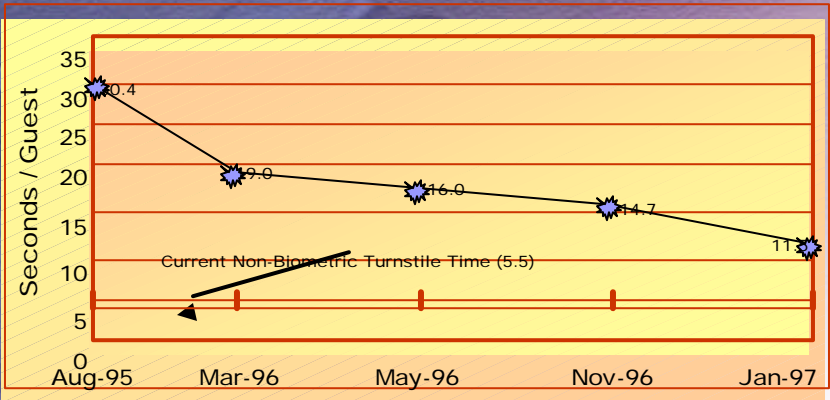
Added second alignment peg

“Christmas Tree” visual feedback



Throughput improvements:

Throughput Time History



What have we done since
implementation?

Scenario tests performed for other technologies:

April, 1997 - "real world", geometry tests

June, 2000 - "best world", fingerscan tests



Next Steps?

Goal:

Decrease average transaction time from 11.5 seconds to 9 seconds, without sacrificing accuracy

Adopt BioAPI system to incorporate future-proofing



Next Steps?

Lessons learned to date:

There is no “magic bullet” device for our application

A change in technology does not solve problems, it exchanges them for other problems

Next Steps?

Lessons learned to date:

User throughput

System	Transaction Time (Seconds)			Time includes entry of PIN?
	Mean	Median	Minimum	
Face	15	14	10	Excluded
Fingerprint-Optical	9	8	2	Excluded
Fingerprint-Chip	19	15	9	Excluded
Hand	10	8	4	Included
Iris	12	10	4	Included
Vein	18	16	11	Included
Voice	12	11	10	Excluded

User transaction times

Ref: Tony Mansfield, Et Al., "Biometric Product Testing", Draft 0.6
March 19, 2001, Center for Mathematics and Scientific Computing (CMSC) of the National Physical Laboratory, U.K.

We will not spend big \$ on testing - quick tests give us enough information to "fish or cut bait"

